

REMARKS

Claims 1-3 and 5-12 are pending in the present application. Independent claims 1 and 7 are amended herein to include the limitation that the layer of ethylene vinyl alcohol is less than 0.5 mils and provides an effective oxygen barrier. Claim 2 is cancelled as redundant and Claims 13-19 are added, reproducing the previously outstanding claims with the added limitation that the layer of EVOH is less than 0.1 mils. The amendments to the claims are supported by the detailed description of the invention on pages 8 and 9.

35 U.S.C. § 103, Obviousness over Bettle in view of Jones

Claims 1-3 and 5-12 stand rejected under 35 U.S.C. § 103(a) over Bettle, III (USPN 5,320,889) in view of Jones et al. (USPN 6,063,414). This rejection is respectfully traversed. It is submitted that this rejection should be withdrawn for at least the following reasons:

- Bettle does not teach that a layer of ethylene vinyl alcohol (EVOH) that is less than 0.5 mils would provide an effective oxygen barrier;
- There is no suggestion in the cited art to combine Jones with Bettle; the suggestion relies on hindsight reconstruction;
- Combining Bettle with Jones would not reach the claimed limitations.

Each of these problems with the rejection will be discussed separately.

Representative Claim 1 now recites,

1. (Currently amended) A method for making a plastic dry food container, said method comprising the steps of:
 - a) forming a thin sheet comprising a layer of ethylene vinyl alcohol film that is less than 0.5 mils thick as an inner-most surface of the container and a layer of high density polyethylene as a second layer attached to said ethylene vinyl alcohol layer;
 - b) placing a dry food product within said container, wherein the dry food product comes into contact with the ethylene vinyl alcohol film and acts as a desiccant to draw moisture away from the ethylene vinyl alcohol film; and
 - c) sealing said container;
wherein said layer of ethylene vinyl alcohol film provides an effective oxygen barrier to maintain freshness of said dry food product.

Bettle does not teach that the claimed layer of EVOH is an effective oxygen barrier

This claim now recites a very thin layer of EVOH that is less than 0.5 mils thick. This is thinner than the EVOH layer disclosed in Bettle. Bettle states that,

It is essential that the EVOH layer be at least 0.5 mils thick at the thinnest point of the bottle, although EVOH layers from about 1.5 to 2.0 mils thick are useful. As a practical matter, the EVOH layer may be much thicker, particularly for bottles wherein food products are to be held under non-refrigerated conditions. ... To achieve the best oxygen barrier, it is important that the EVOH layer be bone dry and insulated from any moisture coming from inside or outside of the package. ... It has been discovered that the portion of a EVOH layer which is adjacent to the "wet side" ... will function as a moisture barrier to protect the dry portion ... of the EVOH layer from moisture within the package, provided the EVOH layer is thick enough. The wet portion of the EVOH layer, which is in contact with the food, functions as a sacrificial layer insofar as it does not contribute as significantly to the oxygen impermeability. The wet portion of the EVOH layer functions as a moisture barrier, thus preventing moisture from the packaged food from reaching the "dry portion" of the EVOH layer. When combined with the exterior moisture barrier, this allows the "dry portion" of the EVOH to function as a superior oxygen barrier. ...

Generally speaking, an EVOH layer having a minimum thickness of approximately 0.5 mils is adequate for bottles to hold orange juice under refrigerated conditions. The oxygen permeability of the EVOH is affected significantly by the temperature at which the food is stored, wherein oxygen permeability increases with increasing temperature. The EVOH layer of 0.5 mils described herein is suitable for bottles designed for storage of orange juice at temperatures no higher than about 45 degree F. For a package designed to store or contain orange juice at room temperature, it would be desirable to increase the thickness of the EVOH layer to 2 mils or more, although this adds to the cost of the package.1

Thus, Bettle notes that at least 0.5 mils of EVOH is required to provide an effective oxygen barrier, and that even this thickness is effective only if the product is maintained at about 45°F. For higher temperatures, such as the room temperature in which most dry goods are stored, Bettle notes that a layer of EVOH having a thickness of 2 mils or more is necessary to provide an oxygen barrier. Thus, Bettle actually teaches away from making a layer less than 0.5 mils thick, because Bettle wants to have enough thickness that part of the layer can be sacrificial. The layer of Bettle must, therefore, be thicker than 0.5 mils to serve as an oxygen barrier.

Bettle is clearly teaching that the layer of EVOH claimed in Claim 1 is not thick enough to provide an oxygen barrier in its given environment. Bettle neither discusses nor suggests a very dry internal environment, as this patent discusses packaging orange juice. Bettle lacks both a disclosure of a layer thinner than 0.5 mils or a suggestion to modify Bettle's dimensions.

¹ Bettle, column 3 line 58 through column 4 line 53 and column 6 lines 31-42

Combination of Jones with Bettle is not suggested

With regard to Jones, the rejection states,

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided a dry food product with a water activity 0.7 or less to act as a desiccant in a container in Bettle, III in order to package food that does not require preservatives or removal of oxygen to attain an increased shelf life, freshness and palatability of the dry food product as taught by Jones et al.²

The question in an obviousness rejection is not just whether one can combine the cited references to reach the invention, but also if the suggestion to combine the references is present. It is submitted that neither Jones nor Bettle make any suggestion to use a thin EVOH layer in a dry environment to act as an oxygen barrier. Bettle is working in a wet environment, while Jones is testing to see what conditions can allow the dry dog food to stay fresh. Jones discloses that oxygen impermeable film are suitable, but does not disclose how to achieve those oxygen impermeable films. One would not generally combine a container for a drink with a product that stays freshest if it is kept very dry, since the conditions are so different. It is submitted that the rejection relies on hindsight to combine these two patents, which is, of course, impermissible.

The combination of Bettle with Jones would not reach the claimed limitations

It is submitted that even if one did combine the container of Bettle with the product of Jones, as suggested in the rejection, it is submitted that this combination would still not meet the current claims. All claims now recite a thickness of EVOH that is either less than 0.5 mils or less than 0.1 mils. The container of Bettle has a thickness greater than the thickness recited and neither patent provides a motivation to make this layer less.

For the above reasons, this rejection is overcome.

Added claims

New Claims 13-19 duplicate the previously existing claims, but add the limitation that the layer of EVOH is less than 0.1 mils thick. Thus, the patentability of these new claims is supported by the arguments above, as well as by the following arguments. In the rejection, it is asserted that while Bettle does not teach using the claimed thickness of EVOH, this limitation is unimportant because,

² Office action, page 3, next to last paragraph

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provide an ethylene alcohol layer with a thickness of approximately 0.1 mils since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. ... Bettle, III discloses that it is known to make the bottles as thin as possible in order to use a smaller amount of material in the bottle to reduce the cost of the finished product.³

Bettle, however, does not support this assertion. While Bettle does want the overall container to be as thin as possible for cost purposes, this patent acknowledges that a minimum thickness is required in several of the plastic layers so that they can fulfill their intended function. One such layer is the EVOH layer; it is taught that this layer must be 0.5 mils or greater to provide an oxygen barrier. Therefore, these claims are allowable.

Conclusion

It is respectfully submitted that obviousness of the subject application over Bettle, III (USPN 5,320,889) in view of Jones et al. (USPN 6,063,414) is overcome and should be withdrawn. Allowance of all extant claims is respectfully requested.

The examiner is invited to call the undersigned or Colin P. Cahoon at the below-listed telephone number if in the opinion of the examiner such a telephone conference would expedite or aid the prosecution and examination of this application. The Commissioner is hereby authorized to charge any additional payment that may be due or credit any overpayment to Deposit Account No. 50-0392.

Respectfully submitted,

1/28/04
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³ Office action of 11/05/2003, page 3, last paragraph through page 4